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09/675,980	09/29/2000	Arthur Zavalovsky	50325-0106	1727

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EXAMINER

BATES, KEVIN T

ART UNIT PAPER NUMBER

2155

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/675,980

Applicant(s)

ZAVALKOVSKY ET AL.

Examiner

Kevin Bates

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7-30-04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to a communication made on June 28, 2004.

The Information Disclosure Statement was received on July 30, 2004.

Claims 1-65 are pending in this application

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-65 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3-5, 7-9, 11-17, 19-21, 24, 27-28, 31-34, 36-38, 41, 44-45, 48-51, 53-55, 58, 61-62, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derby (5359593) in view of Fichou (6765873).**

Regarding claims 1, 5, 9, 13, and 14, Derby discloses a method for dynamically adapting packets of data in a packet-switched network based on bandwidth information within the network (Column 2, lines 20 – 25), comprising the computer-implemented steps of: marking a first group of one or more packets of a data flow with a first behavioral treatment value, wherein the first behavioral treatment value directs devices within the network to treat the first group of one or more packets with a first quality of service treatment (Column 5, lines 47 – 55); determining an achieved flow bandwidth for

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the data flow based on data traffic within the network (Column 6, lines 21 – 27); determining a second behavioral treatment value based on the user traffic flow; and marking a second group of one or more packets of said data flow with said second behavioral treatment value, wherein the second behavioral treatment value directs devices within the network to treat the second group of one or more packets with a second quality of service treatment (Column 6, lines 30 – 34), but Derby does not explicitly indicate using the achieved flow bandwidth within the network to determine a second behavioral treatment value. Fichou discloses a system which monitors network resources based on the achieved network flow of traffic and determines a second behavioral value based on the results of the monitoring (Column 3, lines 53 – 60; Column 5, lines 16 – 30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Fichou's teachings on Derby's system in order to allow the network to monitor and identify oversubscription and have better control over the network in dealing with both situations (Column 3, lines 27 – 50).

Regarding claims 3, 7, and 11, the combination of Derby and Fichou discloses the steps of determining packet flow characteristics of the first group of one or more packets of a data flow (Derby, Column 6, lines 53 – 55); and determining the second behavioral treatment value based on the available bandwidth within the network and the packet flow characteristics of the first group of one or more packets of a data flow (Derby, Column 6, lines 21 – 30).

Regarding claims 4, 8, and 12, the combination of Derby and Fichou discloses the steps of establishing a Quality of Service (QoS) policy for applying a per-hop-

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behavior treatment for forwarding packets within a flow in said network; and generating the first behavioral treatment value based on the established QoS policy (Derby, Column 5, lines 47 – 64; Fichou, Column 8, lines 24 – 27; lines 11 – 14).

Regarding claims 15, 32, and 49, Derby in combination with Fichou discloses that the first behavioral treatment is determined without regard to the achieved flow bandwidth (Derby, Column 5, lines 47 – 55).

Regarding claims 16, 33, and 50, Derby in combination with Fichou discloses that the second behavioral treatment is a behavioral treatment that provides a lower level of service than other available choices of behavioral treatments (Derby, Column 6, lines 38 – 40); and wherein the second behavioral treatment provides a high enough level of service to accommodate the achieved flow bandwidth (Derby, Column 2, lines 30 – 35).

Regarding claims 17, 34, and 51, Derby in combination with Fichou discloses the second behavioral treatment is a behavioral treatment that provides a minimum level of service that is a sufficient level of service to accommodate the achieved flow bandwidth (Derby, Column 2, lines 32 – 35).

Regarding claim 19, 36, and 53, Derby in combination with Fichou discloses repeating the step of determining the achieved flow bandwidth and steps that follow the step of determining the achieved flow bandwidth (Derby, Column 6, lines 21 – 34; Fichou, Column 3, lines 53 – 60; Column 5, lines 16 – 30).

Regarding claim 20, 37, and 54, Derby in combination with Fichou discloses repeating the step of determining the achieved flow bandwidth and steps that follow the

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step of determining the achieved flow bandwidth multiple times, therein enhancing efficiency of the network on an on going basis (Derby, Column 6, lines 30 – 34; Fichou, Column 3, lines 53 – 60; Column 5, lines 16 – 30).

Regarding claim 21, 38, and 55, Derby in combination with Fichou discloses the step of determining the achieved flow bandwidth is performed by at least estimating the achieved flow bandwidth based on Management Information Base (MIB) variables (Fichou, Column 4, lines 13 – 19).

Regarding claims 27, 28, 44, 45, 61, and 62, Derby in combination with Fichou discloses that the data flow is associated with only one behavioral treatment at any given time (Derby, Column 5, lines 21 – 27).

Regarding claims 31, 48, and 65, Derby in combination with Fichou discloses that determining the second behavioral treatment is in response to a determination of achieved flow bandwidth resulting from the determining of the achieved flow bandwidth (Fichou, Column 3, lines 53 – 60; Column 5, lines 16 – 30).

Regarding claims 24, 41, and 58, Derby discloses a method for dynamically adapting packets of data in a packet-switched network based on bandwidth information within the network (Column 2, lines 20 – 25), comprising the computer-implemented steps of: marking a first group of one or more packets of a data flow with a first behavioral treatment value, wherein the first behavioral treatment value directs devices within the network to treat the first group of one or more packets with a first quality of service treatment (Column 5, lines 47 – 55); determining an achieved flow bandwidth for the data flow based on data traffic within the network (Column 6, lines 21 – 27);

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determining a second behavioral treatment value based on the user traffic flow; and marking a second group of one or more packets of said data flow with said second behavioral treatment value, wherein the second behavioral treatment value directs devices within the network to treat the second group of packets with an updated set of quality of service treatments (Derby, Column 6, lines 30 – 34), but Derby does not explicitly indicate using the achieved flow bandwidth within the network to determine a second behavioral treatment value. Fichou discloses a system which monitors network resources based on the achieved network flow of traffic and determines a second behavioral value based on the results of the monitoring (Column 3, lines 53 – 60; Column 5, lines 16 – 30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Fichou's teachings on Derby's system in order to allow the network to monitor and identify oversubscription and have better control over the network in dealing with both situations (Column 3, lines 27 – 50).

**Claims 22, 39, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derby in view of Fichou as applied to claims 1, 3-5, 7-9, 11-17, 19-21, 24, 27-28, 31-34, 36-38, 41, 44-45, 48-51, 53-55, 58, 61-62, and 65 above, and further in view of Dillon (6473793).**

Regarding claim 22, 39, and 56, the combination of Derby and Fichou does not explicitly indicate that the step of determining the achieved flow bandwidth is performed by at least checking a Transfer Control Protocol/ Internet Protocol (TCP/IP) window size and determining a value for the achieved flow bandwidth based on the TCP/IP window size. Dillon teaches the idea of using the information in TCP/IP protocol to help enforce

data rates in a network (Column 3, lines 41 – 58). It would have been obvious to one of ordinary skill in the art at the time the invention was made because TCP is a common connection type in the internet and it can easily be throttled based on window size (Column 1, lines 51 – 65).

**Claims 23, 40, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derby in view of Fichou as applied to claims 1, 3-5, 7-9, 11-17, 19-21, 24, 27-28, 31-34, 36-38, 41, 44-45, 48-51, 53-55, 58, 61-62, and 65 above, and further in view of Bushmitch (5928331).**

Regarding claims 23, 40, and 57, Derby in combination with Fichou does not explicitly indicate that the step of determining the achieved flow bandwidth is based on reception quality feedback from a Real-Time Transport Protocol (RTP) receiver. Bushmitch teaches that RTP information is associated with RTCP packets that have flow control and session management information about the flow (Column 6, lines 13 – 24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use RTP control feedback to learn all the information that the network needs to know about the achieved bandwidth of the flow and also because RTP deals with applications such as streaming data which keeping a QoS is more important (Column 1, lines 36 – 59).

**Claims 29, 30, 46, 47, 63, and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derby in view of Fichou as applied to claim 1, 3-5, 7-9, 11-17, 19-21, 24, 27-28, 31-34, 36-38, 41, 44-45, 48-51, 53-55, 58, 61-62, and 65 above, and further in view of Haddock (6104700).**



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Regarding claims 29, 46, and 63, Derby in combination with Fichou does not explicitly indicate that the achieved flow bandwidth is a percentage of the network bandwidth. Haddock teaches that traffic flow can be measured according to the percentage of the maximum bandwidth that flow is using (Column 8, lines 1 – 15; Column 10, lines 51 – 67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Haddock's teaching in the combination of Derby and Fichou in order to perform and monitor weighted queuing based on service classes and have an easier to calculation QoS (Column 2, lines 12 – 30; Column 8, lines 9 – 15).

Regarding claims 30, 47, and 64, Derby in combination with Fichou and Haddock discloses that the second behavioral treatment results in the dataflow having a different achieved flow bandwidth, which is a different percentage of the network bandwidth because Haddock teaching setting up QoS based on the percentage of bandwidth that a flow is allowed to use (Haddock, Column 8, lines 1 – 8) and Derby discloses measuring that flow and adjusting the reserved bandwidth to a lower value/priority if the traffic flow is not using the total reserved bandwidth (Derby, Column 6, lines 19 – 27) thus reducing the percentage of bandwidth for a flow.

**Claims 2, 6, 10, 18, 25, 26, 35, 42, 43, 52, 59, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derby in view of Fichou as applied to claim 1, 3-5, 7-9, 11-17, 19-21, 24, 27-28, 31-34, 36-38, 41, 44-45, 48-51, 53-55, 58, 61-62, and 65 above, and further in view of Koskelainen (6570851).**

Regarding claims 2, 6, and 10, the combination of Derby and Fichou discloses the step of marking a first group of one or more packets includes the step of storing indicator of QoS in each header of the first group of one or more packets of a data flow (Derby, Column 5, lines 21 – 27; Fichou, Column 7, lines 15 – 20; Column 8, lines 24 – 27); the step of determining a second behavioral treatment value includes the step of determining a second QoS (Derby, Column 6, lines 25 – 41); and the step of marking a second group of one or more packets includes the step of marking the new QoS indicator in each header of the second group of one or more packets of a data flow (Derby, Column 6, lines 25 – 41), but the combination does not explicitly indicate that those priorities are marked in the packets using differentiated services codepoint (DSCP) values. Koskelainen discloses using DSCP values to control QoS agreements in a network (Column 4, lines 20 – 30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Koskelainen's teaching of DSCP values to indicate to the network the QoS of the packets in the combination of Derby and Fichou in order to give the nodes a better indication about what type of packet they are dealing with and what QoS it needs to operate at (Column 1, line 65 – Column 2, line 25; Column 2, line 63 – Column 3, line 11).

Regarding claims 18, 35, and 52, Derby in combination with Fichou and Koskelainen discloses the step of marking the first group is performed by at least communicating the first behavioral treatment to a differentiated services node located at a border of a differentiated services domain; and wherein the step of marking the second group is performed by at least communicating the second behavioral treatment

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to the differentiated services node (Derby, Column 5, lines 30 – 37; Column 6, lines 30 – 34; Koskelainen, Column 4, lines 22 – 29; Figure 2, element 16).

Regarding claims 26, 43, and 60, Derby in combination with Fichou and Koskelainen discloses that the initial set of QoS values is an initial set of Differentiated Services Codepoint (DSCP) values (Koskelainen, Column 4, lines 20 – 29); wherein the updated set of QoS values is an updated set of DSCP values; wherein the step of estimating traffic bandwidth further comprises the steps of defining one or more QoS policies that specify target bandwidth values and a range of possible services for each the plurality of data flows (Derby, Column 2, lines 20 – 30), wherein a given target bandwidth value is specified for the given data flow (Derby, Column 2, lines 33 – 35), and wherein the given target bandwidth identifies a specific bandwidth that is desirous or required by the given data flow (Derby, Column 2, lines 20 – 35); gathering information about the traffic bandwidth; and determining the traffic bandwidth based on the information gathered (Derby, Column 2, lines 41 – 52).

Regarding claims 25, 42, and 59, Derby in combination with Fichou and Koskelainen discloses a method for performing packet marking (Derby, Column 2, lines 20 – 25; Koskelainen, Column 4, lines 20 – 29) comprising the computer implemented steps of defining an initial set of Quality of Service (QoS) values for coloring packets within a plurality of data flows, wherein each of the QoS values indicates an allocation of bandwidth (Derby, Column 5, lines 47 – 55); coloring a first group of one or more packets of a given data flow selected from the plurality of data flows, without regard to an achieved flow bandwidth, by at least communicating the initial set of QoS values to

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each of one or more edge differentiated services domain nodes that are located at one or more edges of a differentiated services domain, and the one or more edge differentiated services domain nodes using one or more of the initial set of QoS values to color the first group (Derby, Column 5, lines 47 – 65); estimating traffic bandwidth within the network based on bandwidth information corresponding to a current traffic pattern of the network, wherein the traffic bandwidth estimated includes an achieved flow bandwidth for the given data flow (Derby, Column 6, lines 21 – 27; Column 3, lines 53 – 60; Column 5, lines 16 – 30)); determining an updated set of QoS values for coloring packets within the plurality of data flows, based on the traffic bandwidth estimated, wherein the updated set of QoS values provide lower levels of service than other available choices of QoS values, and wherein the updated set of QoS values provide a high enough level of service to accommodate the traffic bandwidth estimated (Derby, Column 6, lines 30 – 34; Column 2, lines 31 – 41); coloring a subsequent group of one or more packets of the given data flow with the one or more of updated set of QoS values by at least communicating the updated set of QoS values to each of one or more edge differentiated services domain nodes, and the one or more edge differentiated services domain nodes using one or more of the updated set of QoS values to color the subsequent group (Derby, Column 6, lines 28 – 34); repeating the steps of estimating traffic bandwidth, determining an updated set of QoS values, and coloring a subsequent group multiple time, therein tuning the network on an ongoing basis (Derby, Column 6, lines 30 – 34).

***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No. 6459682 issued to Elleson, because it discloses monitoring a network for traffic flows to find flows that are breaking the service level agreement, which it then reduces their QoS treatment.

U. S. Patent No. 6449255 issued to Wacławsky, because it discloses monitoring achieved flow and changing the node behavior based on that feedback.

U. S. Patent No. 6453351 issued to Endo, because it discloses monitoring traffic in a network and updates behavior based on those results.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Bates whose telephone number is (703) 605-0633. The examiner can normally be reached on 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (703) 308-6662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KB

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September 28, 2004

  
HOSAIN ALAM  
SUPERVISORY PATENT EXAMINER